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## 29. HABITAT AND NECTAR RESOURCE UTILISATION BY BUTTERFLIES FOUND IN SIRUVATTUKADU KOMBEI, PALNI HILLS, WESTERN GHATS

(With one text-figure)

Siruvattukadu Kombei is a valley covering roughly 80 sq. km in the northeastern section of the Palni Hills in the Western Ghats, between 10° 21' to 10° 25' N lat. and 77° 36' to 77° 44' E long. (Fig. 1). The mean altitude of the valley is 750 m above msl. Siruvattukadu Kombei comprises the watershed of the perennial stream Seradipallam and receives nearly 1000 mm of rainfall every year. The main forest types in the area are moist deciduous, semi-evergreen, riparian mixed and dry deciduous (Sustainable Development Program, 1992). The forest habitat is now patchy due to conversion to agriculture and other human impacts.

Though there have been 2 earlier studies that recorded the butterfly life of the Palni Hills (Evans, 1910; Ugarte and Rodericks, 1960), Siruvattukadu Kombei has never been explored for its butterfly fauna, on account of being isolated from the rest of the Hills. In the dry season of 1992 (February to June), I carried out a survey of the butterfly fauna of Siruvattukadu Kombei by identifying species, recording their nectar-feeding relationships and presence/absence in various habitat types. Four major habitat types in the valley were chosen for systematic sampling. Species were identified following Wynter-Blyth (1957), Satyamurti (1966), and Varshney (1979, 1985).

**Butterfly Diversity:** 105 butterfly species were recorded, out of which 13 were Papilionids, 7 Satyrids, 21 Nymphalids, 1 Erycinid, 17 Pierids, 14 Hesperids, 6 Danaids, 25 Lycaenids and 1 Acraeid.

The total butterfly species count is a high fraction (42%) of the 248 that have been recorded from the Palni's so far. One species, the Tamil

Oakblue, was a new record for the Palni Hills. Many more species are likely to be discovered, since the present study covered only one dry season.

### HABITAT AND NECTAR RESOURCE UTILISATION

**Lime plantations** were the dominant agricultural land-use in the area. Lime trees were planted in regular rows with scattered cultivated trees such as silk-cotton (*Bombax ceiba*), jackfruit (*Artocarpus heterophyllus*) and banana (*Musa sapientum*). The notable feature of the plantations was their variety of herbaceous weeds such as *Stachytarpheta indica*, *Tridax procumbens*, *Leucas aspera*, *Sida* spp. and *Acanthospermum hispidum*, whose flowers attracted large numbers of butterflies. In addition, the agricultural fields were surrounded by thickets of *Lantana camara* which were flowering throughout the study period and appeared to be an important source of nectar for several butterfly species (Table 1).

The common butterfly species were those that appeared restricted to open and degraded agricultural land, including the Papilionid, Lime Swallowtail, Nymphalids such as the Yellow Pansy, Blue Pansy and Peacock Pansy and numerous Pierids such as Emigrants (Common, Mottled and African). The Indian Skipper and the Ceylon Ace were the only Hesperids seen in the plantation habitat and seemed confined to it. Lycaenids such as the Lime Blue, the Peablu, Common Silverline and Lesser Grass Blue were quite common in the plantation habitat and were not spotted in any other habitat.

Apart from these sedentary species, forest species like the Blue Mormon and Common





TABLE 1 (contd.)  
OBSERVATIONS ON NECTAR-FEEDING IN BUTTERFLIES

BUTTERFLY SPECIES	AGRICULTURAL & RIPARIAN ZONES									PLANT SPECIES OF: FOREST ZONE										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<i>Castalius ethion</i>						+														
<i>Zizeeria otis</i>								+												
<i>Catachrysops strabo</i>						+														
<i>Celastrina carna</i>					+															
<i>Jamides bochus</i>	+												+							
<i>Syntarucus plinius</i>						+														
<i>Jamides celeno</i>						+														
<i>Zizula gaika</i>						+														
<i>Chilades laius</i>		+	+			+														
<i>Freyeria trochilus</i>		+				+														
<i>Syntarucus jesous</i>						+														
<i>Lampides boeticus</i>				+		+		+												
<i>Acraea violae</i>					+	+														

## KEY TO PLANT SPECIES;

1: *Asclepias currassavica*6: *Tridax procumbens*11: *Pongamia pinnata*16: *Gardenia obtusa*2: *Parthenium* sp.7: *Abutilon* sp.12: *Albizia odoratissima*17: *Uniden. Acanthaceae*3: *Leucas aspera*8: *Mimosa pudica*13: *Pavetta indica*18: *Xanthoxylum rhetsa*4: *Stachytarpheta indica*9: *Tamarindus indica*14: *Psychotria* sp.19: *Strychnos potatorum*5: *Lantana camara*10: *Mastixia* sp.15: *Terminalia arjuna*20: *Murraya paniculata*

NOTE: '+' sign indicates feeding relationship was observed

Banded Peacock were often seen venturing far away from the forest edge, feeding on *Lantana* at the edge of fields. These species, being more mobile than most forest dwelling species, use the nectar resource available in more open habitats too and could cross open areas to reach other forest fragments. All the Danaids, except the Glassy Tiger, were very common in the agricultural fields feeding avidly on the abundant flowers of *Stachytarpheta indica*.

**Stream bank habitat** consisted of alternating rocky terrain and sand banks, along which grew scattered clumps of grasses and shrubs. In some places the stream banks were shaded over with riparian tree species such as *Pongamia pinnata*, *Terminalia arjuna* (upto 25 m), *Mangifera indica* and *Maytenus emarginata*. In more open areas, shrubby species such as *Solanum torvum*, *Asclepias currassavica* and *Lantana camara* grew on the sandbanks.

These two types of habitats (i.e. shaded and open stream bank) had distinct communities. *Asclepias currassavica*, *Terminalia arjuna* and *Pongamia pinnata* appeared to be important nectar source for butterflies in the stream bank habitat.

This habitat was found to be the richest in the number of butterfly species. 79% of the total number of butterflies seen during the study were recorded from this zone. Some of the rarest species of this area, such as the Common Leopard, Staff Sergeant, Common Map, Suffused Snowflat, Water Snowflat and Blue Oakleaf were seen alighting here on shady, moist streambanks. These species were found mainly or exclusively in this zone, in addition to some Lycaenids such as the Peacock Royal and Indian Sunbeam.

In slightly more open areas, Common Sailors, Tailed Jay, Great Orangetips and Emigrants (all three species) joined large groups of Bluebottles to mud-puddle on open sand-

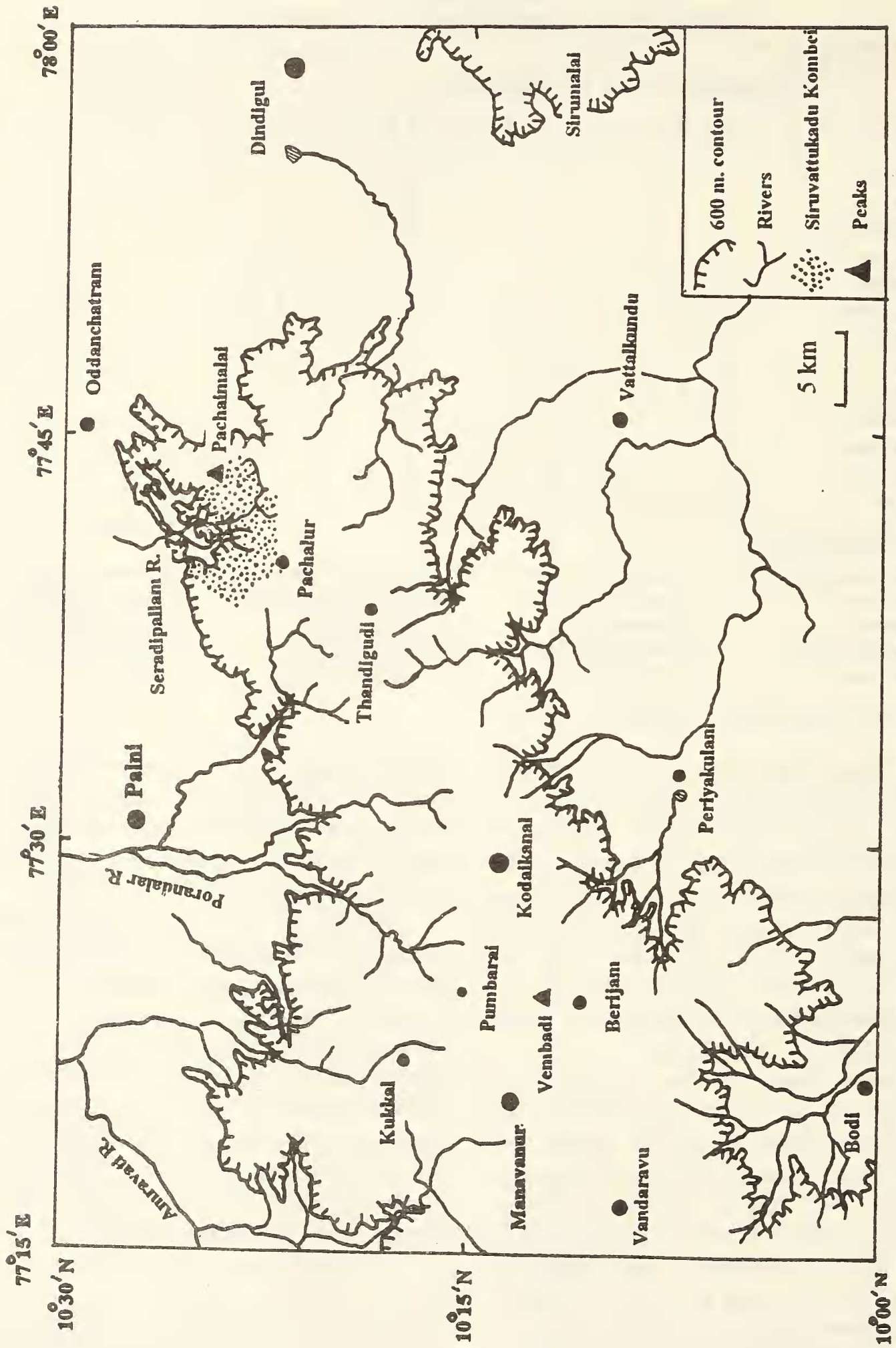


Fig. 1. Location of Siruvattukadu Kombei in the Palni Hills (adapted from Oates 1978)



banks. A few Spot Swordtails were observed occasionally in these groups. The Common Beak was frequently seen in these areas. It was interesting to note that very few Danaids were seen mud-puddling here or elsewhere. The Painted Courtesan was sometimes seen in agricultural streamside patches. The Red Pierrot was always seen flying weakly amongst low-growing patches of *Bryophyllum* spp. (its food plant) on damp sandbanks. It was perhaps the most sedentary species encountered during the study.

Thus the stream bank appeared to be the most important habitat for most of the species seen in Kombei, including the open area species, forest and generalist species. These butterflies gathered here in large numbers in the dry season, possibly because this was the only habitat where the males could replenish their mineral needs by mud-puddling. Therefore, if a quick inventory of the butterfly fauna of an area is desired, the best place to start in would be the stream bank zone.

During April and May, 1 km of the riparian area was filled with thousands of Common Crows, Dark Blue Tigers and some Glassy Blue Tigers. Swarms of butterflies flew up when one walked through this area and every leaf was covered with butterflies. It appeared to be a migration but no directional movement was seen. The butterflies lingered on for nearly four weeks and fed continuously on the flowers of *Terminalia arjuna* which were trees, in full bloom then.

**Moist deciduous forest** was present on most of the hill slopes around the valley. It was dominated by the canopy species *Miterophora heyneana*, *Alphonsea sclerocarpa*, *Celtis wightii*, *Sapindus emarginata* and *Diospyros melanoxylon*. Shrubs such as *Murraya paniculata*, *Pavetta indica*, *Tarenna asiatica* and *Canthium parviflora* occurred commonly in the understory.

Common along the forest paths were Satyrids such as the Baby Fivering, Glad-eye Bushbrown and Dark-brand Bushbrown, the Papilionids Blue Mormon and Crimson Rose and the Nymphalid Chocolate Pansy. Rarer species

in this zone were the Psyche, Yamfly, Angled Pierrot and Southern Indian Rustic. White-fourings were often seen feeding on horse and donkey dung on the trails and the Tamil Oakblue was seen flashing across the forest paths frequently. The Common Banded Peacock was infrequent during the study period, but towards the end, a group of freshly emerged adults were seen settling on a wet patch on a forest path. *Gardenia obtusa*, *Strychnos potatorum* and *Albizia odoratissima* were major nectar sources for butterflies in the forest during the study period.

In the **riparian moist deciduous forest**, the understory was dominated by *Murraya paniculata* and *Canthium parviflora* while trees such as *Mangifera indica* and *Miterophora* were prominent in the top canopy. This habitat was found to be vegetationally quite similar to other forests of the area. Consequently, the butterfly life was also similar to that in the moist deciduous forest transects. The flowering shrub *Pavetta indica* was common in this zone, and on one tree, the flowers appeared to be monopolised by the Mormon, which was once seen chasing off other butterflies.

It was found that Siruvattukadu Kombei harbours several species of butterflies that are rare and reportedly confined to good quality deciduous and evergreen forest, such as the Spot Swordtail, Redspot Duke, Common Banded Peacock, Water Snowflat, Chestnut Bob and the Common Nawab. The fauna also includes several other species that are endemic to the Indian subcontinent such as the Common Map, Glad-eye Bushbrown, Common Birdwing, Baron and the Blue Oakleaf (Larsen, 1987a, b, c and Wynter-Blyth, 1957). Endemics constitute nearly 25% of the fauna discovered so far and most of these were found to avoid man-modified habitats.

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### 30. FIRST RECORDS OF SUBFAMILY TENTHREDININAE (HYMENOPTERA : TENTHREDINIDAE) FROM INDIA

(With nine text-figures)

The genus *Colochelyna* with its type species *C. magrettii*, was erected by Konow in 1898. It was represented by three species from southeast Asia, excluding India. Now, with *C. magrettii* recorded from Nagaland, the genus has extended its limits to India as well. Similarly, *Tenthredo sauteri* (Rohwer) previously recorded from Taiwan, Burma and Tonkin and *Tenthredo kingdonwardii* Malaise from China and Burma, are now reported from India.

*Colochelyna magrettii* Konow, 1898  
(Fig. 5)

Female: Average length: 16 mm. Body dark reddish-brown except antennae, tibiae and tarsi of all legs. The following parts are black: furrows above the clypeus and of mesonotum,

mesoscutellar appendage, metanotum, mesepimeron, mesepisternum except a spot in the centre, metapleuron, propodeum except extreme posterior margin, 2nd and 3rd abdominal tergites, coxae, trochanters, and basal halves of all femora. The labrum, an irregular spot covering frontal area, and extreme posterior margin of propodeum with deflexed sides are white. Wings with a darker shade along anterior margin of forewings. Venation blackish, costa and stigma fulvous.

Antenna slightly compressed, 2.0 x head width, segment 3 distinctly longer than 4 as 6:3. Clypeus slightly rounded, with a faint indication of incision in middle. Labrum small, convex, with a conical anterior margin. Malar space almost equal to the diameter of median ocellus. LID: IDMO: EL :: 3.1 : 4.0 : 3.0, OOL : POL : OCL :: 2.5 : 1.0:1.7, Frontal area above the level of eyes;